

Remarks/Arguments

Claim 1 is pending in the application. Claim 1 is rejected. Claims 2-16 are added. No new matter has been entered.

The disclosure is objected to because there is no description for drawings 12A-12G. Applicant submitted a Preliminary Amendment and Response to Notice to File Missing Parts of Application on February 5, 2004, which provided an amendment to provide a description for drawings 12A-12G. The amendment is presented below:

AMENDMENT TO SPECIFICATION

Page 3, lines 25-26, please amend this paragraph as follows:

FIGS. 11A-11G 11A, 11B and 12A-12G illustrate aspects of three or other poly-phase alternative preferred embodiments of the present invention.

Claim Rejections – 35 USC § 112

Claim 1 is rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what N is. Claim 1 is amended to particularly point out and distinctly claim the subject matter to provide that N is the number of electrical excitation phases.

Claim Rejections Under 35 USC § 103

The subject matter of claim 1 was commonly owned at the time any inventions covered therein were made.

Claim 1 is rejected under 35 USC 103(a) as being unpatentable over Obidniak (5,786,645) in view of Pouillange (4,758,756). The Office action asserts that Obidniak shows all of the limitations of the claimed invention except for the ratio of the electromagnetic members to the permanent magnet members is N to N+1.

Applicant respectfully traverses this assertion for a number of reasons. Applicant respectfully submits that Obidniak does not show or suggest permanent magnets arranged so as to have alternating north-south polarities, as provided in Applicant's claim 1. There is no suggestion in Obidniak for such an arrangement.

Additionally, Obidniak does not show or suggest a stator arc length so as to define a relationship between the spacing of the permanent magnets and a set of electromagnetic members arranged along the arc length, as provided in Applicant's claim 1.

Further, Applicant respectfully submits that the machine in Obidniak is not of the same configuration as Applicant's invention. Obidniak is apparently using back EMF to charge a capacitor, which is critical to the operation of the Obidniak machine. (Col. 3, lines 4-8 and 50-60). Based on such teachings, Obidniak describes a motor not operating in the manner described and claimed by Applicant, but instead by utilizing energy from a charged capacitor to provide a repulsive force to the permanent magnet (compare Obidniak's Fig. 5 with Applicant's Fig. 8, for example).

There is no apparent description in Obidniak of how to construct a self-starting electromotor type machine as Applicant has described and claimed. It is not clear how one could have the Obidniak machine be self-starting given the described repulsive force operation based on a capacitive discharge, etc. Applicant respectfully submits that in accordance with Figs. 1 and 5, the mode of operation of the machine in Obidniak requires that, for a machine with more than one core, the alignment between each core and respective magnet must occur simultaneously. If such is not the case, the attraction/repulsion of one magnet/core pair would not be in sync with other magnetic/core pairs destroying the function of the motor. One detrimental effect of this magnet-to-core arrangement is especially evident where the rotor has stopped with the cores aligned with respective magnets. Activation of the cores, without the benefit of the "kick" provided by the capacitors, would result in the rotor remaining stationary. A

miss-alignment between the cores and the magnets could rotate the rotor in the opposite direction.

The Office action asserts that Pouillange shows the ratio of the electromagnetic members to the permanent magnet members is N to N+1 (column 5, lines 45-55) for the purpose of increasing torque-to-weight ratio. The Office action concludes that since Obidniak and Pouillange are from the same field of endeavor, the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

Applicant respectfully traverses this assertion for a number of reasons. Applicant repeats that in accordance with Figs. 1 and 5 of Obidniak, the mode of operation of the machine in Obidniak requires that, for a machine with more than one core, the alignment between each core and respective magnet must occur simultaneously. If such is not the case, the attraction/repulsion of one magnet/core pair would not be in sync with other magnetic/core pairs destroying the function of the motor. Applicant respectfully submits that a ratio as suggested in the rejection applied to the machine in Obidniak not only will not increase the torque-to-weight ratio but will destroy the function of the motor as taught by Obidniak.

Applicant respectfully submits that the combination of Obidniak and Pouillange is not appropriate and does not render Applicant's invention obvious for at least two reasons. The machines in Obidniak and Pouillange are very different and very inconsistent in their teachings. Obidniak is an axial-flux machine (the magnetic flux in the air-gap flows in the direction parallel with the axis of the rotor) that relies upon a repulsive force being supplied from an electric charge stored in a capacitor. Pouillange describes a very different electromagnetic machine not utilizing toroidally shaped cores, but instead is a radial-flux machine (the magnetic flux in the air-gap flows in the direction perpendicular to the axis of the rotor) having an internal rotor and an

external stator constructed in a vernier-configuration wherein the rotor and stator have opposing teeth. (Col 4, lines 56-61)

Further, the ratio wherein the stator has np teeth and the rotor has $(n+1)p$ teeth, with p the number of stator pole-pairs, has no correlation with the ratios as Applicant has described and claimed. (See Col. 2, lines 30-36; col. 3, line 30-32; and col. 5, lines 48-50) The ratio as Applicant has described and claimed does not relate the number of stator and rotor "teeth", but rather specifies the relative spacing of stator elements and rotor permanent magnets in terms of the number of electrical drive phases N . It is not even possible to interpret the ratio as provided in Pouillange with the ratio as provided and claimed by Applicant. The integer n provided by Pouillange refers to a different and non-analogous physical quantity than does the N as provided by Applicant. It is certainly not obvious to reinterpret a number of teeth as a number of phases when Pouillange does not associate the number of phases with any aspect of the ratio of stator and rotor teeth.

Applicant respectfully requests reconsideration and allowance of amended claim 1 and new claims 2-16.

In view of the foregoing reasons for distinguishing over the cited references, Applicant has not raised other possible grounds for traversing the rejections, and therefore nothing herein should be deemed as acquiescence in any rejection or waiver of arguments not expressed herein.

CONCLUSION

Applicant submits that in view of the foregoing remarks and/or amendments, the application is in condition for allowance, and favorable action is respectfully requested. If there are any further questions regarding this application, Applicant's Attorney requests an opportunity to discuss such matters with the Examiner by way of a telephone interview. The Commissioner is hereby authorized to charge any fees, including extension fees, which may be required, or credit any overpayments, to Deposit Account No. 50-1001.

Respectfully submitted,



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